

I CLAIM:

1. A membrane electrode assembly consisting essentially of a central layer of ionomer material comprising at least two solution-cast ionomer components; and a catalyst layer adjacent to each side of the central layer.
2. A membrane electrode assembly of Claim 1 wherein the assembly is prepared by
  - a. applying a catalyst slurry onto each of a first and a second removable decal;
  - b. drying each catalyst slurry to form a dried catalyst layer;
  - c. applying at least one ionomer solution layer on each resulting dried catalyst layer;
  - d. drying and at least partly curing each of the resulting layers of at least one ionomer solution;
  - e. bringing the ionomer layers on each of the first and second decal assemblies into contact to join the ionomer layers; and
  - f. removing the decals from the resulting assembly.
3. A membrane electrode assembly of Claim 1 wherein the assembly is prepared by
  - a. applying a catalyst slurry onto a first decal;
  - b. drying the catalyst slurry;
  - c. applying a solution of at least one ionomer to a second decal;
  - d. drying and at least partly curing the resulting applied ionomer solution;
  - e. joining the two decal assemblies with the ionomer and catalyst layers in contact with each other; and
  - f. removing the decal from the ionomer layer to form a first membrane electrode assembly component;
  - g. repeating steps (a) to (f) to form a second membrane electrode assembly component, and combining the resulting two membrane electrode components by bringing the ionomer layers of each component into contact to join the ionomer layers; and removing the decals from the resulting assembly.

4. A membrane electrode assembly of Claim 1 further comprising a perimeter sealing material between the at least two solution-cast ionomer components, the sealing material having a solid perimeter and a central portion having at least one perforation formed therein.
5. A membrane electrode assembly of Claim 4 wherein the sealing material consists essentially of polyimide.
6. A membrane electrode assembly of Claim 4 having a plurality of perforations formed in the central portion of the sealing material.
7. A membrane electrode assembly of Claim 6 wherein the perforations in the central portion of the sealing material have a diameter of about from 3 to 10 mils.
8. A membrane electrode assembly of Claim 4 wherein the thickness of the sealing material is about from 10 to 30 microns.
9. A membrane electrode assembly of Claim 4 wherein the perimeter sealing material has a thickness of about from 10 to 30 microns.